Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS

Cancel Claims 1-18.

19. (New) A method for organizing and storing data comprising the steps of:

receiving a block of data from a data source at a first data storage site;

maintaining addressing information in a tree data structure for said block of data;

determining a storage device address to store said block of data;

determining a logical block address within said storage device address to store said block of data;

determining said tree data structure for said block of data;

determining a depth in said tree data structure of said storage device address;

in response to said storage device address not existing in said tree data structure, creating said storage device address in said tree data structure;

in response to said logical block address existing in said tree data structure, overwriting an existing block of data with said block of data at said logical address;

in response to said logical block address not existing in said tree data structure, storing said block of data at said logical block address;

in response to said depth in said tree data structure of said storage device address being greater than a depth threshold, K, adjusting said depth in said tree data structure of said storage device address to be less than said depth threshold, K;

in response to said block of data not being a final block of data of a group of data, returning to the step of receiving a block of data; and

transferring said group of data to a second data storage site.

20. (New) The method of Claim **19**, comprising the additional steps of:

determining a number of active input ports receiving data from said data source; and

setting said depth threshold, K to depend upon said number of active input ports.

21. (New) The method of Claim **19**, comprising the additional steps of:

determining a number of active input ports receiving data from said data source; and

setting said depth threshold, K equal to $\log_2 (P)$, where P = said number of active input ports.

22. (New) The method of Claim **19**, wherein the step of adjusting said depth in said tree data structure further comprises the step of:

adjusting said depth in said tree data structure of said storage device address to be equal to zero.

23. (New) An article of manufacture comprising a data storage medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform method steps for organizing and storing data comprising the steps of:

receiving a block of data from a data source at a first data storage site;

maintaining addressing information in a tree data structure for said block of data;

determining a storage device address to store said block of data;

determining a logical block address within said storage device address to store said block of data;

determining said tree data structure for said block of data;

determining a depth in said tree data structure of said storage device address;

in response to said storage device address not existing in said tree data structure, creating said storage device address in said tree data structure;

in response to said logical block address existing in said tree data structure, overwriting an existing block of data with said block of data at said logical address;

in response to said logical block address not existing in said tree data structure, storing said block of data at said logical block address;

in response to said depth in said tree data structure of said storage device address being greater than a depth threshold, K, adjusting said depth in said tree data structure of said storage device address to be less than said depth threshold, K;

in response to said block of data not being a final block of data of a group of data, returning to the step of receiving a block of data; and

transferring said group of data to a second data storage site.

24. (New) The article of manufacture of Claim **23**, comprising the additional steps of:

determining a number of active input ports receiving data from said data source; and

setting said depth threshold, K to depend upon said number of active input ports.

25. (New) The article of manufacture of Claim **23**, comprising the additional steps of:

determining a number of active input ports receiving data from said data source; and

setting said depth threshold, K equal to $\log_2 (P)$, where P = said number of active input ports.

26. (New) The article of manufacture of Claim **23**, wherein the step of adjusting said depth in said tree data structure further comprises the step of:

adjusting said depth in said tree data structure of said storage device address to be equal to zero.

27. (New) A data storage system comprising:

a primary backup appliance located at a first data storage site;

a second data storage site;

one or more communication lines for communication between said first data storage site and said second data storage site;

wherein said primary backup appliance is programmed to perform method steps for organizing and storing data, comprising the steps of:

receiving a block of data from a data source at a first data storage site;

maintaining addressing information in a tree data structure for said block of data;

determining a storage device address to store said block of data;

determining a logical block address within said storage device address to store said block of data;

determining said tree data structure for said block of data;

determining a depth in said tree data structure of said storage device address;

in response to said storage device address not existing in said tree data structure, creating said storage device address in said tree data structure;

in response to said logical block address existing in said tree data structure, overwriting an existing block of data with said block of data at said logical address;

in response to said logical block address not existing in said tree data structure, storing said block of data at said logical block address;

in response to said depth in said tree data structure of said storage device address being greater than a depth threshold, K, adjusting said depth in said tree data structure of said storage device address to be less than said depth threshold, K;

in response to said block of data not being a final block of data of a group of data, returning to the step of receiving a block of data; and

transferring said group of data to a second data storage site.

28. (New) The system of Claim **27**, comprising the additional steps of:

determining a number of active input ports receiving data from said data source; and

setting said depth threshold, K to depend upon said number of active input ports.

29. (New) The system of Claim **27**, comprising the additional steps of:

determining a number of active input ports receiving data from said data source; and

setting said depth threshold, K equal to $\log_2 (P)$, where P = said number of active input ports.

30. (New) The system of Claim **27**, wherein the step of adjusting said depth in said tree data structure further comprises the step of:

adjusting said depth in said tree data structure of said storage device address to be equal to zero.

31. (New) A method for organizing and storing data comprising the steps of:

receiving a block of data from a data source at a first data storage site;

maintaining addressing information in a tree data structure for said block of data;

determining a storage device address to store said block of data;

determining a logical block address within said storage device address to store said block of data;

in response to said logical block address existing in said tree data structure, overwriting an existing block of data with said block of data at said logical address;

in response to said block of data not being a final block of data of a group of data, returning to the step of receiving a block of data; and

transferring the final block for each specific address of said group of data to a second data storage site, in accordance with said tree data structure to allow storing said blocks to actual addresses at said second data storage site.

32. (New) The method of Claim **31**, wherein said group of data is a consistent transaction set.

33. (New) An article of manufacture comprising a data storage medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform method steps for organizing and storing data comprising the steps of:

receiving a block of data from a data source at a first data storage site;

maintaining addressing information in a tree data structure for said block of data;

determining a storage device address to store said block of data;

determining a logical block address within said storage device address to store said block of data;

in response to said logical block address existing in said tree data structure, overwriting an existing block of data with said block of data at said logical address;

in response to said block of data not being a final block of data of a group of data, returning to the step of receiving a block of data; and

transferring the final block for each specific address of said group of data to a second data storage site, in accordance with said tree data structure to allow storing said blocks to actual addresses at said second data storage site.

34. (New) The article of manufacture of Claim **33**, wherein said group of data is a consistent transaction set.

35. (New) A data storage system comprising:

a primary backup appliance located at a first data storage site;

a second data storage site;

one or more communication lines for communication between said first data storage site and said second data storage site;

wherein said primary backup appliance is programmed to perform method steps for organizing and storing data, comprising the steps of:

receiving a block of data from a data source at a first data storage site;

maintaining addressing information in a tree data structure for said block of data;

determining a storage device address to store said block of data;

determining a logical block address within said storage device address to store said block of data;

in response to said logical block address existing in said tree data structure, overwriting an existing block of data with said block of data at said logical address;

in response to said block of data not being a final block of data of a group of data, returning to the step of receiving a block of data; and

transferring the final block for each specific address of said group of data to a second data storage site, in accordance with said tree data structure to allow storing said blocks to actual addresses at said second data storage site.

36. (New) The system of Claim **34**, wherein said group of data is a consistent transaction set.